Ethnobotanical use of Symplocos paniculata (Thunb.) Miq. in Punakha District, Bhutan

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ABSTRACT

Symplocos paniculata of symplocaceae was found to be used by Serigang community under Punakha Dzongkhag. The seed of the species was widely used for extraction of oil. There appears to be a smaller number of people who make medicines in the village. The production of Pangtse makhu is on a steady decline because of the availability of a cheaper alternative. Due to heavy work and little return, most of the trees are being cut to make way for other cash crops. Although the village is equipped with modern amenities, people still depend on forest for goods and services. Ethnobotany is still apparent in every item and situation that make up their everyday life. From this study prospects of an ethnobotanical plant have been found in kabjisa geog. It also suggests that rural folks should also be considered as an important source of information about the use of ethnobotanical plants. The effort in this study may provide benefits for future researchers in other parts of the locality.

Keywords: Pangtse makhu, Serigang, Ethnobotany, Bhutan.

1. INTRODUCTION

Ethnobotany basically talks about the study of a region's plants and their practical uses through the traditional and indigenous knowledge of local culture and the people. An ethnobotanist thus will have to strive in collecting and documenting the local customs involving the practical uses of local flora for many aspects of life, such as medicines, foods, and clothing.

The extraction of oil from Symplocos paniculata (symplocaceae) was practiced effectively before and was one of the sources of livelihood in Serigang village of Kabjisa geog under Punakha dzongkhag. Now the practice has greatly reduced due to availability of refined oil from neighbouring countries. There is very limited information regarding the use of plants and even in other parts of the country as whole. Till date, the species has not been well studied and documented for future references.

This case study would provide significant ethnobotanical information, both qualitative and quantitative of Symplocos paniculata of this locality primarily used for traditional extraction of oil, called pangtsi makhu. The plant plays an important role in livelihood of local communities. Thus, it is essential for documentation of this plant before such valuable knowledge becomes inaccessible along the present generation of elderly people. Moreover, this study could also play an important role for the conservation of these plants and provide preliminary information required for future researchers.

The ethnobotanical information that we collected on this species would encourage future ecological researchers on conservation threats and distribution of Symplocos paniculata.

Morphology of Symplocos paniculata

Pangtsi-shing (*Symplocos paniculata*) also known as *Asiatic sweetleaf* or *Sapphire berry* is a medium-sized tree, which grows from 5 to 10 meters in height. A deciduous species, its bark is ash-grey with vertical fissures, & flowers in April and May. Its flowers are creamy white with fragrant flowers of 2-3 inches in panicles in early summer. The leaves are simple, 1.5-3.5 inches placed alternately. Its fruit is ready for harvesting by June or July (Chhetri, 2016).

Old bark of this species scales off naturally. People scratch off the bark, believing that this helps produce better fruits (citation).

Uses of Symplocos paniculata (Pangtsi-shing)

Seeds of *Symplocos paniculata* are used for extraction of oil. The major components in the fatty acid of *Symplocos paniculata* fruit oil were palmitic, oleic, stearic, linoleic and linolenic acid (Qiang, Changzhu, Lijuan, Hui, Jingzhen, & Xinyu, 2015). The fruit is used in jams, jellies and sauce. A yellow or red dye is obtained from the leaves and barks. It has been proposed as a therapy for treatment of type 2 diabetes and obesity (Kunkel, 2015). The powdery residue after extraction is added in agriculture field. This is known to make soil loose and fertile.

Gap Analysis

Until now, people did not get support from the government and the practice of extracting oil from *Symplocos paniculata* was not recognized. Even in the present, the situation remains the same and has led to deterioration of such practices.

The yield from *Symplocos paniculata* has greatly reduced with deterioration of previous practices. The progeny of this species has weakened resulting in slower regeneration and has increased the consumption of imported oil.

Climate change has left a gap of 25 years in *Pangtsi makhu's* intensive extraction. People maintaining this practice in the locality are less as per survey.

If people are supported by the government, the initiative to plant *Symplocos* will resurface. The government should research on artificial plantation and generate positive outcomes to evoke interest within people. Initiatives and encouragement from the Department of Forestry on artificial regeneration of *Symplocos paniculata* is expected to revive the vulnerable practice. Although the trade of *Pangtsi makhu* is lucrative, people are indulged in chilli plantation resulting in the deterioration of *Pangtsi makhu* extraction.

Nutritional and commercial preferences of people can be improved through the revival of *pangtsi makhu* extraction if initiatives and encouragement is provided from higher authorities.

2. MATERIALS AND METHODS

The study was carried out in Sergigang village under kabjisa gewog in Punakha. The documentation was done through semi-structured interviews in those household which used to extract oil through *Symplocos paniculata*. Questions were also asked to a few elderly villagers who had idea on its production.

Result and Discussion: Traditional knowledge on practice of Pangtsi-makhu extraction

The traditional ethnobotanical knowledge on plants and their uses which is the result of thousands of years' experience passed through generations is rapidly disappearing. This is a consequence of socioeconomic development and land use changes (Signorini, Pieredda, & Bruschi, 2009).

The extraction of oil (Pangtsi Makhu) has been practiced twenty-five years ago and had been the source of oil until now. During those days people did not have to buy oil as they could extract from the wild and within their area. It was distributed everywhere during olden days. The oil was mainly extracted from the seeds. They harvest and extract oil during eighth and ninth month of the Bhutanese calendar. The felling of trees was not allowed. Inaccessibility to refined oil is also the reason to extract the oil for themselves.

They carried out maintenance work as the locality believes that it was nature's gift. The silviculture aspects were well maintained. The consumption of traditional oil felt healthier and tastier than the one imported from India. They could earn and generate income at a commercial level. The production and income was high during those times. They use traditional techniques/equipment's to extract the oil from seed. Generally, there were two types of trees, one which ripens and stays intact and the other which falls right after ripening.

Till date there is no policy implemented in the extraction of vegetable oil from *Pangtsi-shing*. As of now there is no report of government support on the oil extraction and no conservation effort of their tradition has been recognized.

Challenges faced

The production of Pangtsi makhu is on a steady decline because of the availability of a cheaper alternative. People opt for imported oil rather than the one that has been naturally extracted and produced. Instead of buying a product that is good for their health, they opt for the cheaper one. The extraction of vegetable oil entails heavy work load and little return. They feel that their hard work is not rewarded. They also face human-wildlife conflict. Most of the trees are being cut down to make way for other cash crops. They feel that the sale of the oil is not generating adequate income that results in cutting trees to cultivate cash crops which have more demand in the market.

Method of preparation

Firstly, collect the fruits from the trees by cutting the branches in the month of September and dry the branches with fruits on the tarpaulin sheet. Subsequently, hit the fruits with the stick to remove the seeds from the twigs and branches.



Figure 1. Cleaned seeds of *Symplocos* paniculata
Photo courtesy: Tshering Dorji



Figure 2. Mortar and pestle for grinding seeds

Clean and segregate the seeds from leaves and twigs and grind the fruits in the wooden mortar. After that dry the fruits in sun light and sieve the crushed seeds. Take the fine ones, then put them in the earthen pot with hollow at the bottom blocked with a cane-woven mat. Steam heat the crushed seed and after 4-5 hours of steaming, transfer it into a sieve and compress it to extract oil. Repeat the compression step once again till the seed is dry (usually twice) (Lhendup, May, & Dorji, 2016).



Figure 3. Steaming of seeds, the picture on right shows the holes which allows steam to pass through. Photo courtesy: Tshering Dorji



Figure 4. The Chham (or the sieve) is made from the shoots of *Plectocomia himalayana* Griffith.

Photo courtesy: Tshering Dorji

Before they used to extract the oil by their traditional method using pounding mortar made of wood, large stone and the Chham (or the sieve) made of one of the bamboo species. Today the old method is replaced by machines that make their life easier and saves a lot of time.

3. CONCLUSION

Symplocos paniculata belonging to family symplocaceae was found to be used by Serigang community under Punakha Dzongkhag. The species was used for extraction of oil. The study observed

the importance of extracting the oil for their livelihood. This study also showed that the source of knowledge was mainly through oral transmission done by elder people. The most experienced ones were the illiterate old aged people.

There were various steps to obtain the natural oil. The powdery residue obtained after extraction process is added in agriculture field which helps to make soil loose and fertile. The traditional knowledge of oil extraction has greatly diminished due to weak regeneration and the work load is more than the yield obtained.

4. ACKNOWLEDGEMENT

We the authors would like to acknowledge, serigang community for providing us with valuable information's. We would also like to thank Tshogpa (Messenger) of serigang for assisting us in data collection. We the authors would like to thank Beop Tshering for arranging transportation and foods during data collection. Finally, we would like to thank Lecturer Cheten Dorji (CNR, RUB) for assisting us during results and discussion.

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